La Raya
Machu Picchu
6

(28) I went to the great bear
On the evening saw no cihuangos there
special. When I returned at dark I found
Johnson & at the Hacienda. He is a Scotsman
man married to a Peruvian woman & with
residence in Cuzco. He has spent much
time in the montaña gathering rubber,
at present is at the Pongo de
Mainique. Tapers of a species may
be of same character but are stiffer & tougher
with only two lobes well developed. He
has seen sloths quite often, also the
great-tailed anteater, & often large
armadillos. He has never met with
a large snake of the boa type. Much of his
time has been spent on the Madre de Dios
in Peru low down where it is navigable
by steamers. He saw more animal life
there than at the Pongo. The Lapidarium
Kalinoski, a Pole, is now at Marcapata
on the Madre de Dios, on working rubber.
The Machiganga bury their dead in the ground
They have very small families because the
tube which connects uterus with
ovary is very small.

OCT. No. 6

(29) Left Headquarters for Machu Picchu
at 8 A.M. & climbed up to
the pass. Day misty & rainy. At San Miguel
Bridge I picked up Richarte & another Indian
who carried my bed & food up while Jose &
Cerillo carried guns & clothing. We reached the top in
about 1 hr 15 minutes. The large ruins were not overgrown
only weeds & bushes were being cleared. The terraces & walls
The city looks quite small & probably held only inhabitants
most of the buildings were of rude stone work, only one I
saw was really made of finely matched granite. All
the available ground has been planted to
corn, cerradas, sweet potatoes & pumpkins.
Two trees grow on the city site & no large ones near.
The stumps of cut trees 3 ft. thru were occasionally seen.
Richarte says cihuangos occur in the fields but
I saw no tracks or runways. He says Mountain
or Red. Coneptates are common, also weasels
but no squirrels. He knows of one large red tree
size of the cat caught by Indios. Viscacha he says
are common. Two he killed recently on trail in the
sunshine. I set rat & steel traps but saw
no fresh signs of large rat. I saw one condora
nearby, also several white bellied doves, crested
Spanish & black headed Gold finches. Heard
an owl near our hut in the evening & saw
the little white bellied Humming bird, star the black
chested & a Sparrow Hawk. Brush
chiefly bamboo grass & a prickly acacia.

(28)

(30) Night clear & bright & cold. Caught only one small Dryomys in trap and no birds in fields or ruins. Saw this morning several red headed Warblers, white-throated ground Tanagers, Crested Sparrows, house wrens & heard many Synaxillas. Saw at least several black throated Grosbeaks like those of Ollantaytambo. This must be the lowest limit as none were seen at San Miguel Bridge. The brushy country looks favorable for rodents but there are no runways or signs of Peromys about. Saw several species of Wrens different from the long one which is common below in Matchu Picchu. The white bellied violet swallow is very common. Cerillo saw a trian like the one shot at Pisac near the Spring of our hut. There is another spring below for the other inhabited huts.

From the city a wonderful view of rugged peaks is obtained to the north across Wiñay Wayna & Pampa & Maquina but only a narrow edge of the mountain can be seen. One of the precipitous peaks, apparently above Machu Picchu Pampa is very rugged & impossibly steep & reach an altitude of about 12000 - 13000 feet. This morning while passing about in the city I ran into a nest of small black wasps like those met at Yahuarmayo. They attacked me in same way. Had no idea they were found outside of low country.

Machu Picchu gets on a clear day 12 hours sun owing to its open situation on a ridge far from other high ridges. This makes it much warmer than the Urubamba Valley below that gets only some 3 to 5 hours sun. On account of its exposed ridge it is colder at night & has the climate as well as many of the birds of Ollantaytambo. Have seen only a few of the San Miguel Bridge birds here. It is dry with very little cross trade as humid as the surrounding country. The weather was partly sunny & windy but rained all day.

(31) Rained all night a quiet misty rain which continued during the morning. Caught only one mouse, an Oryzomys in the traps. Stopped raining at 11 a.m. & we descended to San Miguel Bridge where we arrived at 12:30. The descent was slippery & dangerous. We reached Head quarters at 4 P.M.

The area now used in Machu Picchu which is roughly the terraced area supports only a small family when planted to maize, & Machu Picchu perhaps held more than 500 persons & then most of their food was brought up from below. The water also was largely carried from the river as the springs flow very slowly &

(28)

went to the great bar ... there

become quite dry in the so called dry season.

Nov. 1 Left Headquarters at 8:30 a.m. & reached Santa Rita at 4 P.M. Where we camped in the field. It Rained during the night & also a small amount at Mundo Pampa to Maquina. Saw very few birds on the road & only one new one, a small brilliant green spotted Callisto, which I collected. At Santa Rita saw a thatch Palm in the mountains with some smaller ones nearby & several large tree ferns. This is the only place in the valley I have seen a palm above Santa Ana & is no doubt the extreme upper limit of Palms. The river continued a red mud color like the Colorado, it is about one foot higher than when normal & is very ugly the dirty water giving the rapids a nasty appearance. The maize is now about 3 feet high in the fields & insect life is more abundant than in July. Saw several of the large blue butterflies so common in the low country; also clusters of the small black & red ones on the road which were seen in numbers at San Miguel River & down.

The palto & aguacates are now ripe & I purchased some at the Arabamba River junction. This point seems to be their upper limit in the valley as well as that of coco & cacao. The paltos ripen from mid December only.

2 Rained all night & part of the morning. We got away from Santa Rita camp at 10 A.M. & reached Ollaraba Arumba at 4:30. No rain fell but heavy clouds prevailed all day. The country was green & wet everywhere & in the canyon of the Arumba the road was bordered by the long red blossoms of a fuscia. Farther along the giant cereus cactus were in blossom, the flowers which are white & very large being 5 inches across. With the cereus grew the Stenolobium bushes also covered by a profusion of yellow flowers, a small cereus bore red blossoms & a round stemmed Opuntia cactus grew in places covered by red blossoms also. Short green birds on the road; a brown & blue cuckoo like bird; a large buff throated Hummer; a small brown & white swift. Also shot a grayish tinged & black chinned Hummer. Saw many dull tailed green Paradise hummers.

went to the great bet - ciherauros there

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apparently the 8s of the small longtailed hummer previously shot but failed to list any. The great hummer Patagonia gigas was common but I saw no brilliant males of this species. Maynard & Hasbrouck only at the Yaqui Hasbrouck saw a bear a few weeks ago across the river from Santa Rita in the open grassy hillside far from any forest but scarcely ever shot it.

(7) Sunday. Went with Hasbrouck deer hunting at head of the creek on which the Ruins of Punmarca are situated. The day was cloudy & cold. A pass which is about 15,000 ft. high where we intended to hunt was covered with a coat of snow for 2000 ft, prevented us from further progress. Shot a new Hummer; a black-headed buff one, with white breast patch; & a large yellow flicker, also a pair of Anas flavirostris & many white shouldered wood pigeons. Returned at 5 P.M. along the side of the valley high above the railroad which follows the river. Saw one vizcacha near the base of the pass at about 11,000 ft. Many others live higher up but owing to rain they were not seen today. Saw 15 condors above Punmarca wheeling overhead. The cherry & peach trees are now loaded with green fruit about ½ normal size and strawberries are just ripening.

(10) Shot a lame mule for condor bait & placed him high above the fields near some house ruins a mile above the house. Shot a long tailed Paradise Hummer, & a gray warbler. Set 3 steel traps at mule's body but caught only a native dog. There were 13 condors flying above us as usual, attracted by the animal, but they did not come down all day.

(12) Caught molting in the traps at the mule's body. No condors came down to the meat after we left, but there were always 2 above it.

(13) Left Allan Lane's ranch at 10 A.M. with a pack outfit of 7 mules for Cuzco. A day clear & warm. Went by way of the pueblo of Maras and reached Cuzco late at 8 P.M. after dark. Country dry but fields of corn & green with new crops. Maras is a large pueblo of tiled houses & paved streets. At Lake of Huacoto saw white herons & ducks & saw also a few new birds along the road, a blue backed yellow Tanager & another yellow olive species. Saw also the

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white breasted short-tailed gray eagle. The common birds were goldfinches & sparrows.

(14) Left Cuzco on train at 7 A.M. for La Paz with Hasbrouck. Day clear & warm. The valley below Cuzco was green with growing maize. At Sicuani station we stopped for lunch & visited the market which filled a large plaza, filled with Indians. The Indian women had various sorts of vegetables, knitted garments, pottery etc for sale. At Negra Calcuito we saw a herd of 12 llamas near the track. We left the railway at Araranca station & put over the La Raya pass to await my return from La Paz. We Reached Puno at dark, and stopped at Halfmoon at Juliaca. In the previously plaza a crowd of Indian women had various knitted articles, socks, gloves, caps of llama & alpaca wool for sale. The steamer left Puno at 8 P.M. for the Lake Titicaca trip. Night clear & moonlight & cold making awnings

necessary for the comfort of the American Minister to Bolivia. Mr. O'Rear was a passenger from Cuzco & with him was a Mr. Commerford of the Labor Bureau gathering Chamber of Commerce data from South America.

(15) Awoke at 5 A.M. & went on deck to see the lake as we were passing through a narrow strait between two islands. The islands of the lake were brown & dry but divided into small fields separated by stone fences or hedges. We saw several balsas or reed boats fishing, 2 being lashed together. The oars were propelling these by poles with small blades. However the pole is a rounded stick without any paddle blade & is not very effective. At a village we had a the boat fried fish for, a small flat fish called bogus good in flavor & with very little flesh. This is the only edible fish supplied by the lake

The view of the Andes was magnificent from 6 A.M. to the landing at 9.30. East of L. Titicaca is a solid chain of snow clad peaks the latter of which are Illimani + Sorata. This chain extends for many miles unbroken & doubtless the finest sight in the whole cordillera of the Andes. Nothing betw. it & the sea near Arequipa from the railroad. Most of it, This Andean range has the appearance of the Rocky Mountains although much softer, but the sea of peaks has the same snow clad appearance. No Bear can vie with Illimani. I don't believe that Babies suspect a cañon in such small dia in infancy & La Paz & all the highlands due to the altitude but if taken to a low altitude

[illegible] & rules & yrs old can endure the high altitude & flourish there. This of course is not the case with Indian or Spanish American children who flourish at high altitudes. A condition of this not only annihilates the possibility of European stock getting a foothold here without transplanting of adults. At Guaqui we arrived at 10 A.M. & stopped until noon to await the arrival of Juan Quispe Mamani's launch on the reedy lake shore. Town with wide streets & is clean with a good looking Indian population. On the way to La Paz we passed the ruins of Tiahuanaco which lay on both sides of the railroad. Only stone pillars some 20 feet in height remain & are clearly visible from the cars. The view of the Andes was magnificent. The road as it neared La Paz approached Illimani & just before descending to La Paz the three great peaks of Illimani, Sorata & Patapatani [illegible] overshadow the L.P. gorge

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From the mouth of the La Paz gorge the city spreads out below us, with Illimani towering beyond it. The gorge ends just beyond the city. It is composed wholly of clay & boulders & is a sedimentary deposit, apparently an old river channel.

(16) Went sight seeing with Joe Dunlee, a Yale man, manager of Coroadia Tin mine. We took a long walk down the river to a villa. The banks along the river & the sides of the gorge all the way are a conglomerate of clay & boulders.

About the residences were large eucalyptus trees. Saw also cottonwoods, many weeping willows, some apple & elder trees. Roses were common in gardens, also some cosmos. Most of the birds & roadside ones differs from Cuzco, sparrows, hawks, etc. The Indians here are Aymaras, a larger more alert race than the Quichuas. The women wear many skirts or petticoats often a dozen or more which stick out & give them a large hipped appearance & ballet dancer aspect. They wear a rounded derby shape which makes them look homely. They have superior fighting ability to the Quichuas & neighboring tribes.

Went with Hawkes a merchant & Dunlee to buy vicuna rugs at one of the best places, a small shop owned by a Aymara. She had many vicuna rugs, the uppermost ones natural colors & the sides stained a buffy-yellow. I saw several sloth skins in the shop tanned which are used on saddles as the hair does not heat up. These come from far down the river Beni. She also had a jaguar skin & many viscachas some made into robes & boas. Saw a small species half size of viscachas from Cuzco, not one with white belly & fulvous backs.

(18) Left La Paz at 1:40 P.M. on train for Cuzco. Joe Dunlee went with us as far as his junction. The whole town was down at the station to see the train leave. The day was clear & warm. Reached Guaqui at dusk & boarded the steamer in the harbor

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where a ~~[illegible]~~ breeze was blowing. The night was clear with a full moon. ~~The captain who was pretty well intoxicated ran the launch into the bank several times & ran very out of the harbor & we lost 2 hours on this account.~~

(19) Morning clear on the lake. We reached the wharf at Puno at 10 a.m.; 2 hrs. late. Many water birds were seen in the reeds near the shore, also a small dark fish called Bogas which is salén & of very good flavor. Saw the large black coot, a large grebe & a very small one with white cheeks, also the black headed gull a night heron, many large ducks (mallard) and a few sandpipers. Saw many of the reed boats, balsas, some with a single man poling or rowing with two pole. Reached La Raya or rather the station of Araranca at 2 P.M. and found Narciso at the station. ~~He had a Lady, Miss Evans (Haun) with him~~ to Cuzco. I put up the tent at the station and set out some rat traps as the station men said there were many conejos in the brush grass. Saw several large blackish rodents or mice but caught none. Caught 6 specimens however of a large fulvous & white Rhipidogonys. At dark a heavy thunder shower came up & almost blew the tent away. This was accompanied by lightning & much lightening from which the place gets its name La Raya. A small creek runs by the station which is said to have two species of fish in it. Huamacos are said to be common above the station & vicunas across the valley. Deer occur further down. Saw a condor flying above the station at 5 P.M. Brush grass is everywhere but no bushes of any kind. Besides the grass a woolly haired sessil cactus was noted & also a sessil green one with red flowers, a peculiar ice plant like with showy red flowers was seen on banks.

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(20) Very brisk with landscape covered by a heavy coat of steely snow + the whole valley + mountain sides were pure white. Took several pictures of the pass + the heavy fog banks which filled it. The tent had a load of snow upon it also. The sun came out clear but it took until 11 A.M. before the snow melted. Caught 4 species of mice. 2 Phyllotis, one yellow Phyllotis + a yellow Akodon. All the mammals here have long coats of hair to protect them from the snow at night. At 12 noon the old Indian (Indian) arrived with a horse + we went up the valley on the west side hunting huanaco. About 2 miles above the station we saw a herd of 11 feeding near the summit on a grassy hillside. We went around up the canon on + got above them but before we could get down to their position they were frightened by the old Indian + bolted. They kept uttering a ringing alarm cry quite peculiar, went away in single file led by a large ♂ apparently. We went up the ridge after them but failed to see them again. We met here a large all + + + which ran past + below us some

200 yds. I fired + then + brought the ♂ down in his tracks the first shot. Then I fired 4 shots at the ♀ + killed her. When we approached the ♂ he suddenly got up + in a few yards was out of sight down the hill. Later we saw him 600 yds away walking slowly along the hillside below us. As we were observing the ♀ a herd of 14 came in sight. Ten of these were huanacos + 4 vicunas. They stopped + fed at about 1000 yds when they saw us but later the old Indian who had gone up to the summit to drive any herds down came along + the separated. The vicunas going down the hill + the huanacos up hill. Not more came near enough for us to shoot them. The huanacos are shaggy + gray brown with black faces while the vicunas are bright fulvous + shorter haired. I was surprised to find them in mixed bands. The ♀ we skinned had only grass in her stomach although 2 species of bushes grow on the side hills with the grass where they feed. On her breast the skin was heavy + pad like as in a

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(20) [illegible] Camel & the hind legs were hairless pads or warts. Why they have such soft padded feet for the steep rocky hillsides they inhabit is a mystery to me. I believe that they have but recently been driven to the hillsides & that in the valleys which are all quite swampy broad feet are an advantage & would be of better service to them in their present habitat. The mixed herd of 14 feed quietly & only attend its notes when alarmed & ready to flee for safety. This probably for this is near the upper limit of huanaco range as they were taken at 15,000 & that their coats are distinctly heavier than those living on the low argentine plains. At sunset the daily hailstorm came up & caught us before we got to camp.

(21) Day cloudy but no rain until dark. caught 2 Guinea pigs, or conejos as they are called here. Trapped several species of mice also. Went out at 9 A.M. with the 2 Indians for huanaco in the same direction as yesterday.

Saw none on the hills, where we shot them yesterday but we went far up the side valley to a open pampa with 2 lagoons in it. On the swampy pampa we sighed a herd of 16 vicunas which trailed off to the hills when they caught sight of us. They were all adults of the same size & absolutely alike in color. The huanaco we have seen vary much in color from gray to fulvous. We followed the vicunas but the ground was too open to get nearer than 500 yds. so did not shoot. While we were watching them several took a roll on the ground in horse fashion. Two others lunged on one of the lunging places they use. The lunging places are everywhere in their haunts and are about 10 feet across & clear of brush grass but bright green by a growth of very new short grass. The huanacos have the same habit. We did not

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Carmel to the ~~west~~ head of the ~~gi~~ Huamanco Here

Carmel to the head of the Huamanco. Here hear the vicungas give any alarm cry. Above the vicungas we saw 5 Huamancos close to the ridge of the mountain and there we stalked. I shot at them at 400 yds but missed them & they ran over the ridge after giving their alarm note. I shot at them again for behind 300 yds & hit two in the hind legs which made them drop behind & stand for a long time. I slid down the hill & shot the large one again but far back. He went away a short distance & fell but when I came up startled on again. I hit him again far back so he could not travel. He lay on his side occasionly lifting his head & squealing. I took several photos of his head while alive & then shot him with the 22 auto. ~~Stomach~~ His stomach contained only grass & the body was lean as was the intestines. The other one which was also a ♂ was quite young. Perhaps 2 yrs old. I shot this one down completely by a shot in the hip & left it for dead but later it recovered & crawled away. After skinning the first one I followed it & photographed the head ~~exit~~ while it was in life. Occassionally it looked toward me when I was photographing & at first but did not show real fight, only snarling slightly. The stomach contained only grass & the body was also lean like the other. The other 3 ran away up the mtn. side calling occasionly but not waiting for the wounded ones. Saw no vicuñas or other animals. Also no pairs of grallata geese were seen, also large plovers & a few mallards. No condors came in sight as we were skinning the huamancos. Reached camp at 5 P.M. in the usual evening shower & wind storm.

(22) Remained in camp to skin the huamancos & a lot of rodents which had caved for 3 days. Yesterday while the train was at the station & dogs at the herds & laid after first huamancos skins

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while Narciso was away. Caught only one small mouse a new one + apparently a pygmy ~~Rhipidomys~~ Akodon. Day partly cloudy but warm + quiet until 5 P.M. when rain, hail + windstorms set in as usual here.

(23) Day cold + windy but sunny, very bitter however like midwinter. Caught another Sciurea pig + taken small mid. We left at 9 A.M. with 3 Indians for vicuñas + huanacos to the same pampa where we saw the 16 vicuñas on the 21st. On the way up the side valley we saw huanacos on both sides near the ridge but did not stalk them. When we reached the pampa we saw 2 vicuñas near a herd of alpacas. When they came near the herd as ~~of~~ the alpacas would chase them + they would run away + short distance + then return. We hunted for the large herd but could not find them so we returned for the 2 seen with the alpacas. As we approached the place the ran out unexpectedly from under a steep side hill + we lost them for the day.

Above the pampa on a rocky ridge we saw 2 huanacos + these we stalked but they ran away giving vent to their peculiar mule-like ringing cry. The vicuñas we started made no sound & the large herd acted likewise so I presume they are quite silent. The huanacos whenever startled give the call & often we hear it before we see them. While we were looking about the country from the ridge, a solitary ♂ vicuña came up the side hill toward us + I shot it at 300 yds. It was a ♂ of adult ~~size~~ size but not old. The stomach contained fine brush grass + an equal quantity of the leaves + stems of a small ~~plant~~ plant that grew on the ridge + which I collected for identification. A single condor flew over us which we were shooting the game. From here we returned to camp following the ridge across the valley. When we reached the summit we saw 2 huanacos feeding a long way off + which on seeing the 2 ♂

Indian alyce me gave the alarm with a large & then rose up out of the grass near to us & fired at him at 30 yds & finally hitting him in the lungs & again in the stomach & intestines He went down hill a short way & fell dead. He was a fine large & full size of a llama & quite old. While we were skinning him - hail storm broke over us & the lightning played about incessantly, & the Indians stopped work on the skinning as it was dangerous & the old Indian prayed to the saints while the storm lasted. The ground was covered by a sleety coat of laid snow which made any descent to the road quite difficult on the steep grassy side hill The stomach of this & contained besides the grass some leaves of a serrated leaved sessil alpine herb. We reached camp a little before dark. The vicunges had on the breast no pads for resting on as the guanacos have & the hair is coarse & silky.

The bunch grass which covers the whole country here is very stiff & the rounded blades are armed at the tip with a sharp spine which enters the skin wherever one may put a hand near the grass. In setting traps it is necessary to use care to shove the grass aside. No body with this high puna sits on the grass after the initial attempts!

(24) Caught another of the foxy abadons & a Guinea pig or Roi as the Incharas call them. Went out for vicunga with the 3 Indians. This time across the valley & the east side opposite the Ha Paya station but we saw nothing & returned to the old place (the pampa we visited yesterday). On way near the road found 2 colonies of vis cachas in the boulders. Shot one but saw a half dozen others. They appeared larger than those of Ollantaytambo but size almost the same. On the way up the creek saw a herd of guanacos whereon shot one yesterday. On the pampa found a herd of 5 vicunga & there stalked. They were very alert however

(24)

+ saw me as soon as I broke cover
+ went off. I shot at them running
+ also walking. I killed one fine old
♂ + wounded a ♀ badly in the
hip but she went away with the
others. I got her later however.
These rangers made no noise
when startled or stamped + I
seem quite mute even when
wounded. The stomach contents
of the ♂ consisted of grass with a few
leaves of prostrate herbs. The ♀ left
a heavy blood spoor + went away
with the others, the wound
having torn out the ham muscles
but left the bone unbroken. She went
over a high rocky ridge + far down
the other side + then when we
came in sight again she returned
to the original starting point.
I shot at her twice at 3 or 4 yds +
finally hit her at a great distance
by sighting a spot above her. I paced
the distance + found it to be 510 yds.
The bullet struck her as she was walking
in the rump + passed forward into the
lungs. She contained a large foetus
size of a house cat but hairless. As I
was cutting the membrane the old
Indian stopped me + said the contents
was valuable medicine. He drank
up the contents of the sack on the
spot. The Indians say the young are dropped in March.
The stomach contents of two chiefly
fine grass. When I reached camp
the boys showed me 3 deer on the
ridge above the station about 6 miles
away but as it was dusk I could
not see if there was a horned bull in
the herd. These are the first I have
seen here. No condors came in
sight today while we were shooting.
Saw several spotted lizards at 16,000 feet
elevation; they are the same sort as the
one caught at camp in a rabbit trap and
are the highest reptile in range in the
Andes no doubt.

(25) We set out early for 3 hours for
as the train from Cuzco arrives at 1 P.M.

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Went to the ridge where we first saw huanaco & where I saw hers late last night. Saw nothing of them nor the deer I saw from the station last night. Very clear but with cold bitter wind blowing from the north. Took a look at the viscacha cliffs but saw nothing. Returned at 11 a.m. & packed the outfit for Mallendo & mountain arrived mid-day at 2 p.m. Reached Jarbaca at 9 p.m. & camped there

(26) Very clear & warm. Started at 8:30, Saw no viscacha until passing Cruces Alto where saw a herd of 5 of which I killed one. At Paso de Arrieros saw another herd of 6 near the top. Reached Aregnipa at 5 p.m. Fields of wheat & alfalfa & plain but sandy just this side Chanida. Striking view of the volcanoes of Arequipa & Misti on its height. Stopped only one night.

(27) On the way out of Arequipa the agent gave fine views of Coraparuna the mountain standing out all alone without a rival near it. It formed the only snow mass in sight with the exception of a long snow ridge beyond it & just to the north. Reached Mollendo at noon & [illegible]

Cleaning & packing. Took rooms at Hotel Bernard.

(28) Met Watkins, a naturalist who knows the Arabari River & has collected many birds for the B. M. & the Am. Mus. N.H.

(29) Left Mollendo at 3 p.m. on the steamer Maipo of the Chilian line with mules, Maynard & Jack Callao. Very calm & warm. Last night [illegible] a load talent [illegible] performance for Belgian relief funds. Went ashore with several englishmen at 4 p.m. Water very cold but air fine & balmy. Surf very heavy so that it was quite impossible to venture into the large canoes. Stopped at Chala to load cattle at the 30 [illegible] but did not go ashore.

(1) Reached Pisco, the port of Ica the wine district at 9 a.m. & went ashore for a few hours. The Chincha Islands are the chief guano islands, the Chincha Is. & another group & great numbers of cormorants, pelicans & a gray petrel were seen in the bay but

gulls were few. The guanais gathered annually, the islands being swept absolutely clean, but each year after deposit of 20,000 tons is gathered. This harvest is crop does not vary much in quantity. From the grapes besides wine, a liquor is distilled called Pisco. It is clear in color + in taste like chaluruse a Benedictine. Women came on board selling fruits, oranges, bananas and a large fruit like an egg plant in texture but sweet + mellow like in flavor with a hollow interior in which are the seeds formed the heart. They called this fruit pepita or a similar name perhaps pepino altho it was not a cucumber but an allied fruit.

(2) Reached Callao early in the AM + went ashore with Mr. Morbill who met us with his launch.

Weather overcast but cool + pleasant. Took the train to Lima + engaged rooms at the Hotel Maury not far from the Plaza. In the afternoon we went out to the Zoological garden or Exposition as it is called here. The 2 spectacled bears in the garden showed much variation in the white head markings. One was streaked all over the muzzle + face by irregular white lines while the other had only white on the cheek. The collection of native mammals was very poor. I saw a jaguar, a pair of ateles or black spider monkeys, several brown Cebus which were very intelligent beggars, one in particular stopping his hands to attract attention in regulation Spanish fashion. A caged steel gray agouti was also seen. Only one vicugnas was in the garden + humboldt were wholly lacking. A pair of native

(2)

White tail deer were seen. Condors, parrots & several native eagles & owls were seen also.

(3) In the morning we went to the market where a great variety of fruit & foods was displayed for sale. Paltas were there by the bushel, the peculiar pepino was also seen, & pineapple was common as well as strawberries & watermelons were in season. Several species of fish were seen, the cachua a sea bass being the commonest. Turas, small sharks, mullet & other fish were seen. A common shellfish the vengritas a species of scallop is commonly served either raw or cooked. They are sweet to the taste & quite pleasant. A small shrimp was seen in the market as well as fiddler crabs.

(4) We next went to Quinch with Mitchell to his home at Miraflores about 10 miles out of Lima. The garden surrounding the house consisted of a great variety of flowers & trees: Roses, Geraniums, sweet peas, Oleanders, Orchids, Ipomea seldom blossom.

(5) Left Lima on Central RR with Mitchell, Maynard, Mr. the manager Mr. Dreelan & Mrs Handley (U.S. Consul) & his wife. We reached Matacana a little afternoon & stopped there all night. The railroad follows the Rimac valley which is very narrow & deep about 5000 feet with bare rocky sides of yellowish shale. No vegetation seen except in fields irrigated by the river. The absolute desert strip met near Arequipa was not seen here that was owing to the canyon not being travelling in. Saw no birds about the alfalfa fields, at Chosica & also at Matacana we saw a few cases of syphilis in the form of cheek sores but the disease is not now virulent. It is confined to the west slope of this region from 9,000 ft. downward

(6) Left Matacana at 6 A.M. & continued up the canyon of the Rimac. At Infiernillo the road runs thru a tunnel across the river into a tunnel thru a sheer cliff on the other side. Passed several smelters. At 11,000 feet the hillsides showed bunch grass & a few bushes. At Rio Blanca a limestone bluff was seen.

(2)

Farther along the hillsides were often a bright red due to ferric oxide. The stream was also a bright red due to the recent rains. Near the summit green meadows appeared & some of the higher peaks were covered by heavy banks of snow. Mt. Meiggs the peak blocking the pass had a light coat of snow on it. At Ticlio we entered the long tunnel 1 mile which marks the summit. In the center of the tunnel is the highest point & the tunnel stream goes northerly to the Pacific & on the other to the Amazon & Atlantic. The Amazon slope was a series of broad bunchgrass & lake filled meadows down to Oroya. Flocks of sheep, llama & alpacas were seen here. No game, either quail or ducks was seen here. The same red population was seen here but the chief occupation was herding llamas & alpacas & sheep. Nature was here bright red like the Rio de Oroya. Mabel, Mary & I turned back. We went with Heuancayo following the Mantaro valley all the way & arrived at the station at 11 P.M. Altitude 10,000 feet.

(7) Remained in Heuancayo all day. The town of about 15,000 people lies in a broad level valley some 10 or 15 miles wide. The hills around are rounded & grass covered, without exposed cliffs. No snow peaks are visible. The air is cool & pleasant.

Visited the market at 9 A.M. The vegetables were potatoes, chunyas, cabbages, corn, pork, mutton, chickens. Dates, oranges, bananas & lemons from below. Saw some vicuna wrap, also heavy woolen colored ones made in many patterns. In one house we saw a tame viscacha & in a yard a vicuna. There are no vicunas or huanaco hunting nearby. The birds seen were brown robins, goldfinches, cowbird sparrows & yellow tanagers. The country is without trees but about the town are hedges of Polylepis like those of the montagna & Eucalyptus, also peach trees, apples & Spanish broom. The country produces much wheat, corn & potatoes. Four portions. During the day we had several rain showers with thunder & lightening. The Huancas Indians resemble the Cuzco people but appear to use much less coca.

From Matucana to Ticlio preserved switchbacks, a means of ascent I have never seen before or R.R.

(8) Left Heuancayo at 8 A.M. The trip up the Mantaro Valley was thru green fields of corn, wheat, potatoes, oats, peas etc.

Continued on page 3

Mammals of Galapagos

1 Huanacos - many herds seen ~~do~~ numbers varying from 11 to 3 or 4. Some half grown young seen but no nursing kids. All seen gave a querulous plover like alarm call often repeated before they started away. All of them seem to live high up on the ridges near the summits & often in rocky places. Hunting them was much like sheep hunting the method used being to get above them from the other side of the ridge & drop down on them. When alarmed they ran away in single file led by a large individual usually. They often ran parallel on the hillsides as ascended. We saw none on the pampas or valley floors. Food chiefly bunch grass; sometimes herbs

2 Vicunas - Herds seen every day but usually on pampas or valley floors. When alarmed they ran away swiftly in a bunch & silently but took to steep ridges & rocky places like the huanacos. They were much shyer than huanacos as they are hunted.

Only the young are killed for rugs as they have fine silky coats while the adults have thick heavy wool. One mixed herd seen of 4 vicunas & 10 huanacos

Rugs are made by selecting certain parts of each skin such as necks fore legs, back, heads etc, the skins being tanned & sewed together.

3 Cavia ~~Guinea~~ pig - Zuchina - Kori. Many seen at the station where dog had burrows in the railroad banks

4 Rhipidomys - (large) very abundant at station on ~~ruins~~ cactus

5 Rhipidomys (Aegamys) Two caught at station

6 Phyllotis (small) " Two taken at station

7 " (large) One " "

8 Akodon ~~Ak~~ yellow long haired. Several taken at the station but not common

9 Viscacia - a colony seen at mouth of Vicuna creek near La Rapa Pass but only one shot apparently much grayer than Chilean species.

10 Oldoceros. Three seen above station & shot one night.

11 Coyotes - Said to occur.

12 Cone patos - " " "

red color adjoins to the soil & streams, when in flood
bright red color. Visited the copper smelter
at Casapalca & viewed the process of ore reduction
& under the guidance of the American superintendent.
Below Chonica on one of the side valleys
I saw the remains of many stone terraces
but saw no Inca houses. Old acequias were
seen also. Near Oroya remains of houses &
skeletons are said to occur but we did not see
them. Reached Jauja at dark. The lower Rimac
valley is well cultivated but the streams borders are
covered by a tall cane thicket.

Above the pass near Tickis two glaciers descend to almost to the margin of the upper lake. They however show no green glacial ice but are heavy masses of hardened snow. They are said to be reliable by the early miners who found them as low as the lake shore but now stop on or within a half mile of the lake. The scenery here is magnificent as the best on the whole road. The higher mountains are mantled in heavy snow masses + glaciers and at their foot are the chain of blue + green lakes. Mr. Herbruner the mine superintendent came down with us + he said that fossil shells + fishes had been taken from some of the formations a tunnels The reddish rocks of which Mt. Mercer and many others of the crest are composed are a brown sandstone heard similar to that used in N.Y. for residences. This rock has a dark

Every foot of the level valley was cultivated. Hedges of alders + Polylepis were seen as well as maguey + cholla cactus. The hills which were alluvial without rock formation were bare or deeply eroded by canyons. Several large Indians towns were seen, the largest Yauja being a grove of planted trees. The land is all Indian owned in small tracts there being no large grants or haciendas. From Tambo the rail road continues down a narrow limestone valley to Oroya where we arrived at noon. Along the valley were many gray limestone cliffs. In places hot springs were seen with calcareous deposits in large masses. No birds game animals or trees were seen along the way except planted trees. The limestone hills were covered by bunch grass + cactus. Brechas bushes. River muddy. Weather partly cloudy but pleasant.

(9) Departed from Oroya at daylight and arrived at the Galera tunnel or summit at 8:30. From Ticlio we took the branch road to Morococha which ascends steeply from Ticlio to a height of 15,860 feet, the highest point reached in Peru by Rail. From here we followed along a series of alpine or glacial lakes down to the mining town of Morococha which is situated at 14,000 + some odd feet. The copper mines consist of tunnels, dozen of which have been bored in all the mountain sides about the town which is on the shore of the lakes. The air was cold + the weather partly cloudy. Coarse bunch grass + cactus clothed the hills + the lake shores + swampy meadows were clothed by the matted domes of artic plants. Saw no birds or animals except llamas + horses. Deer are said to occur in the hills but vicunas + huanacos are seldom or never seen.

Birds of La Raya

1 Condor - Often seen but on no occasion did they come very close while we were skirting huanacos & vicuñas. Soon one condor + pair left altho they circled about such places.

2 Carrion Hawk - Often seen flying on hillsides. One pair with a nest seen on cliff.

3 Gallaita Dove - Common in meadows in pairs. Two shot with 22 auto. Several seen on rocky hillsides & cliffs well away from meadows.

4 Crested Mallard - Often pairs seen in ~~ponds~~ or lagoons.

5 Golden flicker - Seen on creek banks in meadow at station. One shot

6 Hummer - A white bellied, grayish hummer was seen at times, hovering about red salt flowers or sitting on rocks near the streams as high as 16,000 ft.

7 Goldfinch - black with yellow wings - Seen often at station in small flocks,

8 Brown backed Mockingbird - Common at station. Not in collection.

9 Barred winged Tank Wren. Most abundant bird about station.

10 Curved billed Furnarius Wren - One caught in a rat trap. Many seen at station.

11 Slaty wood Finch. Many seen on rocks & near railroad.

12 Crested Sparrow - Often seen. One caught in a rat trap. No doubt the upper limit of this specie, the most widespread bird in the Andes.

13 - Furnarius rufus Gray ground Flycatcher - Often seen in meadows.

14 Finamou - Two or 3 seen on hillsides at 16,000 feet while hunting huanacos.

Vegetation of Tafalla -

Climate in November bright + sunny at midday with cold nights + a severe thunder shower of hail or rain every evening from 5-7 P.M. Work.

No trees anywhere.

1 Yucca - largest vegetation. Grows in massed or pure masses on hillsides 16,000 feet on cliffs + rocky hillsides. In fruit only.

2 - Shrubby compressed leaved bushes - seen near ridge of hills in patches at 16,000 feet

3 Spiny bush grass - + the commonest vegetation from the valleys to the snow line. very stiff + painful to the touch. Eaten by cattle but not good fodder.

4 Silky haired cactus - a small cereus cactus common about the station on rocky hillsides + stream banks.

5 Red flowered Cereus cactus. A few seen near station. Flowers red.

6 Red flowered nettle leaved herb. A showy flower visited by hummers, practically the only conspicuous flower. Grows on rocky banks or stream sides.

7 - Fine leaf grass - a few specimens seen on hillsides.

8 Prostrate purple-headed herb. A few seen on rocky ridges. Host of vicunyas,

9 Dandelion leaved herb - seen in same situations as last also eaten by vicunyas + huanacos.

10 Lucerne - a small prostrate flower seen on meadows + roadsides.

11 Agave - Spanish bayonet agave. Prostrate with tall flower stalk. Grow in clumps on gravelly hillsides.

Sand as No. 1.

Rock formation - + granite or felds par granite, but in places it was quite whitish. Much of the hillside is a splintered formation like Allurt- ajtunga + may be a shade of parts instead of granite.

				Nov.
688 ♀	Long tailed Hummer.	Allandaytambo	♀	12
689 "	" " "			
690 "	" " "			
691 "				
692	white eyed Flycatcher			
694	Crested Sparrow	La Raya	14 000 ft.	25
695	Long billed Andean Wren	" "	"	"

Mammals.

				Nov.
867-868	Rhipidomys leucodactylus	La Raya	14,000 ft.	♀♀
869-729	"	"	"	"
877 ♀	Viscaya foetus, ♀ no 876 parent	"	"	"
885-94 ♀	Rhipidomys leucodactylus	La Raya	"	24
896 ♀	Akodon	"	"	25

La Raya -

Lizard - Only spotted species seen at station and as high as 16,000 feet. Living where snow falls every night of year occurs. Highest living species in Andes.

Toad - A brown medium sized species common.

Brown frog - Several caught on moist runways in trap.